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Coulometric determination of sulfur-containing amino acids using halogens as oxidizing titrants

Ziyatdinova G., Grigor'eva L., Budnikov G.
Kazan Federal University, 420008, Kremlevskaya 18, Kazan, Russia

Abstract

It is found that cysteine and methionine quantitatively react with electrogenerated halogens under the conditions of galvanostatic coulometry. Cysteine reacts with all titrants, and methionine reacts only with chlorine and bromine. The stoichiometric coefficients of reactions between cysteine and halogens are 1:3, 1:3, and 1:1 for chlorine, bromine, and iodine, respectively. These coefficients for methionine reactions with chlorine and bromine are 1:2 and 1:1, respectively. It is shown that cysteine can be selectively determined in its mixtures with methionine by coulometric titration with electrogenerated iodine. It is found that twofold amounts of methionine do not interfere with the determination of cysteine. A procedure is developed for the direct coulometric determination of methionine in tablets with a relative standard deviation of 3-5%. © 2007 Pleiades Publishing, Ltd.

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